

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: James J. Fitzgibbon et al.

) **CONFIRMATION NO. 4647**

Appln. No.: 10/622,214

Filed: July 18, 2003

Title: MOVABLE BARRIER OPERATOR SPEED  
CONTROL

) This Request For Certificate Of  
) Correction Of Patent For PTO Mistake  
) was electronically filed on March 2,  
) 2007 using the U.S. Patent and  
) Trademark Office's EFS Web

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Patent No.: 7,042,183 B2

Issued: May 9, 2006

Customer No. 22242

Attorney Docket No. 5569/79009

Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

ATTENTION: Certificate of Correction Branch  
Office of Patent Publication

**REQUEST FOR CERTIFICATE OF CORRECTION  
OF PATENT**

Sir:

In accordance with 37 C.F.R. § 1.322(a), the above-specified patentees,  
through their attorneys, respectfully request that a Certificate of Correction be issued for the  
above-referenced patent to correct the following errors.

**IN THE CLAIMS:**

Claim 21, Column 8, Line 51; After "18" insert -- wherein --;

Claim 29, Column 9, Line 16; Change " AC. " to -- A.C. --; and

Claim 41, Column 9, Line 31; Change "sub-harmonics" to -- sub harmonics --.

**REMARKS**

The above-requested changes result from errors which occurred during printing of the patent. Attached hereto is Form PTO/SB/44 incorporating the requested changes.

A Certificate of Correction (Form #PTO 1050) incorporating all of the above changes is enclosed in duplicate. As these mistakes include errors on the part of the Patentees, please charge our deposit account, Deposit Account No. 06-1135, in the amount of \$100.00 to cover the required fee. Should this calculation be incorrect, please charge any additional fee or credit any overpayment to our Deposit Account No. 06-1135. A duplicate copy of this sheet is enclosed.

Please send the Certificate to:

Kenneth H. Samples, Esq.  
FITCH, EVEN, TABIN & FLANNERY  
120 South LaSalle Street, Suite 1600  
Chicago, Illinois 60603-3406

Respectfully submitted,

FITCH, EVEN, TABIN & FLANNERY

Date: 3/2/07

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

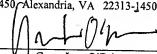
Appln No.: 10/622,214 )  
Applicants: James Fitzgibbon et al. )  
Filed: July 18, 2003 )  
For: VARIABLE SPEED INDUCTION )  
TC/A.U.: 2837 )  
Examiner: Rina I Duda )  
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Docket No.: 5569/79009 )  
Customer No.: 22242 )  
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Confirmation No. 4647

**CERTIFICATE OF MAILING**

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to the Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450, on this date.

7/25/05  
Date

  
\_\_\_\_\_  
Grace Law O'Brien  
Registration No. 48,872  
Attorney for Applicant(s)

**AMENDMENT A**

Mail Stop AMENDMENT  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Sir:

In response to the Office Action dated May 5, 2005 as entered in the above-captioned matter, the applicant respectfully submits the following amendment and response.

**Amendments to the Specification** begin on page 2 of this paper.

**Amendments to the Claims** are reflected in the listing of claims which begin on page 3 of this paper.

**Remarks/Arguments** begin on page 10 of this paper.

**Amendments to the Specification**

Please replace paragraph [[006]] with the following amended paragraph:

**[006]** Figs. 3A and 3B are circuit diagrams of a motor control used in the head-end controller;

Please replace paragraph [[0014]] with the following amended paragraph:

**[0014]** Logic unit 104 is illustrated in schematic form in Fig. 3. Figs. 3A and 3B. AC mains voltage is applied between input terminals 121 and 122 of logic unit 104 and voltages derived from the AC mains voltage are used to control the direction and speed of barrier motion and to illuminate light 81. The AC mains voltage used herein is the common 60 HZ 120V AC of Public Distribution departments. As such, it is basically a sine wave having 60 cycles per second, each cycle being comprised of two half cycles of alternating polarity. Incoming AC voltage is applied via a step down transformer 124 to rectifying and filtering circuitry 126 to produce a DC voltage for powering various circuitry of the control 70. Additionally, a portion of the stepped down voltage wave form is sent via a transistor 128 and output port 127 to microcontroller 84. The wave form at port 127 is used by microcontroller 84 to produce gating signals in synchronism with the AC mains voltage. Although the present description relates to 60 HZ 120V AC the principles taught can easily be applied to other frequencies e.g., 50 HZ and other voltages e.g., 240.

**Amendments to the Claims**

This listing of claims will replace all prior versions, and listing, of claims in the application:

**Listing of Claims:**

Claim 1. (Currently amended) A barrier movement operator comprising:  
an A.C. induction motor coupled to the barrier for controlling the movement of the barrier;  
a source of mains A.C. operating voltage comprising a frequency;  
a motor control apparatus connected to the main operating voltage and the induction motor and responsive to power control signals from a controller for varying the effective frequency of the mains operating voltage coupled to the induction motor; and  
the controller responds to user commands and detected conditions of the barrier for incrementally changing a speed of movement of the barrier by generating power control signals to control the motor control;  
wherein the motor control apparatus operates in synchronism with the frequency of the mains A.C. voltage for varying the effective percentage of line voltage and sub harmonics of the mains A.C. voltage applied to the motor.

Claim 2. (Original) A barrier movement operator in accordance with claim 1 wherein the motor control apparatus operates in synchronism with the frequency of the mains A.C. voltage for varying the effective frequency of the mains A.C. voltage applied to the motor.

Claim 3. (Original) A barrier movement operator in accordance with claim 1 wherein the power control signals of the controller are generated in synchronism with the mains A.C. frequency.

Claim 4. (Original) A barrier movement operator in accordance with claim 1 wherein the motor control apparatus comprises circuitry, responsive to the power control signals for varying the effective voltage of the mains A.C. voltage coupled to the motor.

Claim 5. (Original) A barrier movement operator in accordance with claim 4 wherein the power control signals are generated by the controller in synchronism with the frequency of the mains A.C. voltage.

Claim 6. (Original) A barrier movement operator in accordance with claim 1 the motor comprising a rotor for rotating to a first direction and a second direction.

Claim 7. (Original) A barrier movement operator in accordance with claim 6 comprising direction apparatus for energizing the motor to selectively rotate the rotor in the first or the second direction.

Claim 8. (Original) A barrier movement operator in accordance with claim 7 wherein the direction apparatus connects the motor control apparatus to the motor.

Claim 9. (Original) A barrier movement operator in accordance with claim 7 wherein the controller generates motor direction signals for the selective control of the direction apparatus.

Claim 10. (Original) A barrier movement operator in accordance with claim 1 wherein the mains A.C. operating voltage comprises a recurring sequence of half cycles of alternating polarity occurring at a frequency.

Claim 11. (Original) A barrier movement operator in accordance with claim 10 wherein the effective frequency of the mains A.C. is coupled to the motor for a portion of every Nth half cycle where N is an odd integer greater than 1.

Claim 12. (Original) A barrier movement operator in accordance with claim 11 wherein the power of mains A.C. coupled to the motor is increased by increasing the portion of every Nth half cycle from a predetermined minimum amount to a predetermined maximum amount.

Claim 13. (Original) A barrier movement operator in accordance with claim 11 wherein the effective voltage of the mains A.C. coupled to the motor is periodically increased by incrementally increasing the portion of every Nth half cycle.

Claim 14. (Original) A barrier movement operator in accordance with claim 13 wherein the incremental increasing continues until all half cycles are coupled to the motor.

Claim 15. (Original) A barrier movement operator in accordance with claim 12 where the barrier is moved between first and second positions and the predetermined maximum amount for increasing the portion of half cycles is greater when the barrier is moving toward the first position than when the barrier is moving toward the second position.

Claim 16. (Original) A barrier movement operator in accordance with claim 15 wherein the first position is an open position and the second position is a closed position.

Claim 17. (Original) A barrier movement operator in accordance with claim 6 comprising apparatus for sensing a rotational speed of the rotor and the controller responds to the sensed rotor speed to generate the power control signals.

Claim 18. (Currently amended) An A.C. induction motor control apparatus comprising:

- an A.C. induction motor;
- a source of mains A.C. operating voltage comprising a frequency;
- a motor control circuit connected to the mains voltage and the induction motor and responsive to power control signals from a controller for varying the effective frequency of the mains operating voltage coupled to the induction motor;
- and

the controller includes a program for incrementally changing a rotational speed of the induction motor by generating power control signals to control the motor control circuit;

wherein the motor control circuit operates in synchronism with the frequency of the mains A.C. voltage for varying the effective percentage of line voltage and sub harmonics of the mains A.C. voltage applied to the motor.

Claim 19. (Original) An A.C. induction motor control apparatus in accordance with claim 18 wherein the controller senses the A.C. mains voltage and operates in synchronism with the frequency of the mains A.C. voltage for varying the effective frequency of the mains A.C. voltage applied to the motor.

Claim 20. (Original) An A.C. induction motor control apparatus in accordance with claim 18 wherein the motor control circuitry comprises gating circuitry, responsive to the power control signals for varying the effective voltage of the mains A.C. coupled to the motor.

Claim 21. (Original) An A.C. induction motor control apparatus in accordance with claim 18 the motor comprising a rotor for rotating to a first direction and a second direction.

Claim 22. (Original) An A.C. induction motor control apparatus in accordance with claim 21 comprising direction apparatus for energizing the motor to selectively rotate the rotor in the first or the second direction.

Claim 23. (Original) An A.C. induction motor control apparatus in accordance with claim 22 wherein the direction apparatus connects the motor control apparatus to the motor.

Claim 24. (Original) An A.C. induction motor control apparatus in accordance with claim 22 wherein the controller generates motor direction signals for the selective control of the direction apparatus.



Claim 25. (Original) An A.C. induction motor control apparatus in accordance with claim 21 comprising apparatus for sensing a rotational speed of the rotor and the controller responds to the sensed rotor speed to generate the power control signals.

Claim 26. (Original) An A.C. induction motor control apparatus in accordance with claim 18 wherein the mains A.C. operating voltage comprises a recurring sequence of half cycles of alternating polarity occurring at a frequency.

Claim 27. (Original) An A.C. induction motor control apparatus in accordance with claim 26 wherein the effective frequency of the mains A.C. operating voltage is coupled to the motor for a portion of every Nth half cycle where N is an odd integer greater than 1.

Claim 28. (Original) An A.C. induction motor control apparatus in accordance with claim 27 wherein the power of mains A.C. operating voltage coupled to the motor is increased by increasing the portion of every Nth half cycle from a predetermined minimum amount to a predetermined maximum amount.

Claim 29. (Original) An A.C. induction motor control apparatus in accordance with claim 27 wherein the effective voltage of the mains A.C. coupled to the motor is periodically increased by incrementally increasing the portion of every Nth half cycle.

Claim 30. (Original) An A.C. induction motor control apparatus in accordance with claim 29 wherein the incremental increasing continues until all half cycles are coupled to the motor.

Claims 31-40. (Canceled)

Claim 41. (Original) An A.C. induction motor control apparatus comprising:  
an A.C. induction motor;  
a source of mains A.C. operating voltage comprising a frequency;  
a motor control circuit connected to the mains voltage and the  
induction motor and responsive to power control signals from a controller for varying  
the effective percentage of the mains voltage and sub-harmonics thereof coupled to  
the induction motor; and  
the controller includes a program for incrementally changing the speed  
of the barrier by generating power control signals to control the motor control circuit.

Claim 42. (Original) An A.C. induction motor control apparatus in accordance with  
claim 41 wherein the controller senses the A.C. mains voltage and operates in  
synchronism with the mains A.C. frequency for varying the effective percentage of  
the mains voltage and sub harmonics applied to the motor.

Claim 43. (Original) An A.C. induction motor control apparatus in accordance with  
claim 41 wherein the motor control circuitry comprises gating circuitry, responsive to  
the power control signals for varying the effective power of the mains A.C. voltage  
coupled to the motor.

Claim 44. (Original) An A.C. induction motor control apparatus in accordance with  
claim 41 wherein the mains A.C. operating voltage comprises a recurring sequence of  
half cycles of alternating polarity occurring at a frequency.

Claim 45. (Original) An A.C. induction motor control apparatus in accordance with  
claim 44 wherein the effective wave shape of the mains A.C. operating voltage is  
coupled to the motor for a portion of every Nth half cycle where N is an odd integer  
greater than 1.

Claim 46. (Original) An A.C. induction motor control apparatus in accordance with  
claim 45 wherein the power of mains A.C. operating voltage coupled to the motor is

increased by increasing the portion of every Nth half cycle from a predetermined minimum amount to a predetermined maximum amount.

## **REMARKS**

### **I. Introduction**

Pursuant to the above-noted Office Action, the specification is objected to for minor informalities. Claims 31 and 33-40 are rejected under 37 CFR §1.75 For double patenting. Claims 1-31 and 33-40 are rejected under 35 U.S.C. § 102(b) as being anticipated by Vafaie et al. (U.S. Patent No. 6,082,433). Claims 41-45 are allowed, and claim 32 has been indicated as allowable subject matter if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants acknowledge and appreciate the Examiner's indication, and in response, Applicants cancel claims 31-40 and amend independent claims 1 and 18 to include the indicated allowable subject matter of claim 32. Applicants, thus, respectfully request reconsideration and allowance from the Examiner.

### **II. Specification Objection**

The specification is objected to for minor informalities. In response, Applicants amend the specification to correct the minor informalities as suggested by the Examiner. Accordingly, Applicants respectfully request that the objection of the specification be withdrawn.

### **III. 35 U.S.C. § 102(b) Rejection of Claims 1-31 and 33-40**

#### **A. Independent claims 1, 18, and 31**

In light of the indicated allowable subject matter and to expedite prosecution, Applicants cancel claims 31-40 and amend independent claims 1 and 18 to include the indicated allowable subject matter of claim 32. Accordingly, Applicants respectfully submit that amended independent claims 1 and 18 may be passed to allowance.

#### **B. Dependent claims 2-17 and 19-30**

For the remaining claims, claims 2-17 and 19-30 are ultimately dependent upon amended independent claims 1 and 18, which now include the indicated allowable subject matter of claim 32. Moreover, these dependent claims introduce

additional content that, particularly when considered in context with claim 1 from which they depend, comprises additional incremental patentable subject matter. Nonetheless, Applicants reserve the right to present further arguments in the future with regard to the dependent claims in the event that their corresponding independent claims are found to be unpatentable. For all these reasons, Applicants respectfully submit that claims 2-17 and 19-30 may be passed to allowance.

### C. Conclusion

There being no other objections to or rejections of the claims, Applicants respectfully submit that claims 1-30 and 41-46 may be passed to allowance.

Respectfully submitted,

By: 

Grace Law O'Brien  
Registration No. 48,872

Date: July 25, 2005

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**UNITED STATES PATENT AND TRADEMARK OFFICE**  
**CERTIFICATE OF CORRECTION**

Page 1 of 1

PATENT NO. : 7,042,183 B2  
APPLICATION NO. : 10/622,214  
ISSUE DATE : May 9, 2006  
INVENTOR(S) : James J. Fitzgibbon et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

**IN THE CLAIMS:**

Claim 21, Column 8, Line 51; After "18" insert -- wherein --;

Claim 29, Column 9, Line 16; Change " AC. " to -- A.C. --; and

Claim 41, Column 9, Line 31; Change "sub-harmonics" to -- sub harmonics --.

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